

# PATENT ABSTRACTS OF JAPAN

(11)Publication number : 04-343412

(43)Date of publication of application : 30.11.1992

(51)Int.Cl.

H01L 21/205

H01L 21/31

(21)Application number : 03-115167

(71)Applicant : NEC CORP

(22)Date of filing : 21.05.1991

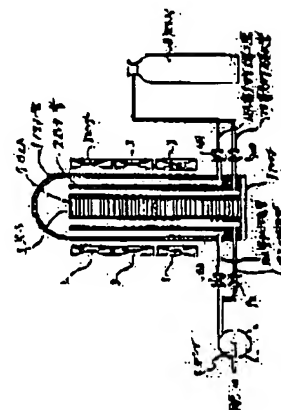
(72)Inventor : HARASHIMA KEIICHI

## (54) VERTICAL TYPE REDUCED PRESSURE VAPOR PHASE GROWTH DEVICE

### (57)Abstract:

PURPOSE: To improve the uniformity of the thickness and the quality of a film formed on a wafer by changing the flow direction of raw gas during a film forming process on the way.

CONSTITUTION: Valves 9A and 11B are opened and valves 9B and 11A are closed directly after the start of film formation. Thus, raw gas flows through the second gas introducing pipe 12B at the bottom of an inner pipe from the bottom to the top of a boat 5. Then, at the point of that the accumulation of the half of the target film thickness is attained, the valves 9A and 11B are closed and the valves 9B and 11A are opened. The raw gas flows through the first gas introducing pipe 12A at the bottom of an outer tube and the flowing path is changed from the top to the bottom of the boat 5. As a result, the film growing speed on a wafer 4 positioned at the bottom of the boat 5 is high for the first half period of the film formation, and for the last half period of the film formation, the film growing speed of the wafer 4 positioned on the top of the boat 5 is high. Therefore, even when the gradient of temperature distribution in a reacting pipe is smaller compared with the conventional orientation, the thickness of the film on the wafer in a batch is made uniform.



## LEGAL STATUS

[Date of request for examination]

[Date of sending the examiner's decision of rejection]

[Kind of final disposal of application other than the examiner's decision of rejection or application converted registration]

[Date of final disposal for application]

[Patent number]

[Date of registration]

[Number of appeal against examiner's decision of rejection]

[Date of requesting appeal against examiner's decision of rejection]

[Date of extinction of right]

BEST AVAILABLE COPY